UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/01257

March 2, 2004

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Attn: John Barco
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Milton Creek Bridge Replacement, St. Helens, Columbia County, Oregon (Corps No. 200300666)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) for the for the issuance of a permit to the City of St. Helens under section 404 of the Clean Water Act to authorize the Milton Creek Bridge Replacement near St. Helens, Columbia County, Oregon. The Corps of Engineers (COE) determined that the action may adversely affect Lower Columbia River chinook salmon (*Oncorhynchus tshawytscha*) and Lower Columbia River steelhead (*O. mykiss*) and requested formal consultation on this action. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize the continued existence of the above-listed species.

Pursuant to section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary and appropriate to minimize the potential for incidental take associated with this project.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for coho salmon (*O. kisutch)* and chinook salmon and starry flounder (*Platyichthys stellatus*). As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action

agency must provide a detailed response in writing within 30 days after receiving an EFH conservation recommendation.

Questions regarding this letter should be directed to Christy Fellas of my staff in the Willamette Basin Habitat Branch of the Oregon State Habitat Office at 503.231.2307.

Sincerely,

F.r Michael R Crouse

D. Robert Lohn
Regional Administrator

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Milton Creek Bridge Replacement,
St. Helens, Columbia County, Oregon
(Corps No. 200300666)

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	March 2, 2004
Issued by:	for Michael R Course D. Robert Lohn Regional Administrator
Refer to:	**2003/01257**

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1. INTRODUCTION

1.1 Background

On October 6, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter from the U.S. Army Corps of Engineers (COE) requesting formal consultation pursuant to the Endangered Species Act (ESA) for the issuance of a permit under section 404 of the Clean Water Act to the City of St. Helens to replace a bridge spanning Milton Creek, near the City of St. Helens, Oregon. The COE determined the proposed action was likely to adversely affect the following ESA-listed species: Lower Columbia River (LCR) chinook salmon (*Oncorhynchus tshawytscha*) and LCR steelhead (*O. mykiss*). References and dates listing status and ESA section 4(d) take prohibitions are can be found in the following Federal Register notices: 63 FR 13347 dated March 19, 1998; 64 FR 14308 dated March 24, 1999; and 65 FR 42422 dated July 10, 2000.

1.2 Proposed Action

The existing Milton Way Bridge is a single-span steel truss bridge supported on concrete abutments with an open grid steel deck. The bridge was constructed in 1914 and it is 26.2 meters (m) long. It has a 5.2-m roadway within a 5.6-m wide deck with a 1.52-m wide cantilevered sidewalk on the west side. According to the latest Oregon Department of Transportation (ODOT) Bridge Inspection Report, the existing bridge was designed for H-15 loading, its superstructure is in fair condition and the overall bridge Sufficiency Rating is 49.10. The presence of rusty steel members, rusty and seized bearings and bent bracing members has been noted in the latest ODOT bridge inspection report. Also, the bridge is very noisy due to the steel grate decking and it no longer meets standard width requirements, making it unsafe for two-way traffic.

Proposed Structure

The proposed replacement bridge will be a single-span structure that uses precast, prestressed slabs that are 27.3 m center-to-center bearing. The new bridge will have a 7.32-m wide roadway with a 1.52-m wide sidewalk on the east side. It will have Type "F" concrete parapet rails on each side. Total superstructure width (out to out) will be 9.67 m. The end bents will be constructed on drilled shaft pipe piles with cast-in-place concrete pile caps and cantilevered wingwalls. The new south bent (Bent 1) will be constructed behind the existing spread footing abutment wall, which will be left in place, both to provide scour protection and to avoid disturbance to the channel. The existing north foundation will be removed and a new north end bent (Bent 2) constructed in its place.

Traffic Detour

The Milton Way Bridge will be completely closed during demolition of the old bridge and construction of the new bridge. Traffic will be detoured around the bridge closure onto Port Avenue, Old Portland Road, and 18th Street for a distance of 3.5 kilometers (km). Access from Milton Way onto DuBois Lane on the north side of Milton Creek will be closed. However, access to Clark Street on the south side of Milton Creek will remain open.

Removal of Existing Bridge

The existing Milton Way Bridge will be removed by disassembly into component pieces. The bridge trusses will first be stabilized at the bridge corners. Cranes operating from both bridge ends will then remove the bridge deck, followed by the stringers and the floor beams. The bridge trusses will be removed one at a time. The existing north abutment wall and foundation will be excavated, demolished, and removed from the site. The existing south abutment wall and foundation will be left in place to provide scour protection to the new south abutment and to help isolate the work area from stream flows during construction. The top portion of the existing south abutment wall will be cut off and removed to provide clearance for the new span. A containment system, similar to that used to contain paint chips and other debris associated with bridge painting and preparation operations, will be installed underneath the bridge before bridge removal to capture any debris that might fall into the stream. No in-water work is anticipated for the bridge removal phase of the project.

Bridge Construction

Both new bridge bents will be constructed outside of the wetted channel, that is, outside the delineated Ordinary High Water Mark (OHWM). Bent 1 construction will be isolated from the wetted channel by the existing bridge bent, which will be left in place. Bent 2 will be isolated from the wetted channel by virtue of its position upslope of the OHWM.

The new bridge construction will start as soon as the old bridge superstructure is removed. Sandbag isolation structures will be constructed downslope of each new bent construction area to isolate construction drainage or debris and prevent disturbance to the wetted channel or stream.

At Bent 1, the existing concrete abutment wall and foundation will be left in place and new construction will take place behind it and upslope of the OHWM. The existing stone abutment wings may need to be modified to provide clearance to construct the new Bent 1 pile cap. It is anticipated that modification of the downstream stone wing will involve some removal and fill within the OHWM, but that any work on the upstream wing will be completely outside the OHWM. Construction of the Bent 1 piling, pile cap and wingwalls will take place entirely outside of the OHWM.

Bent 2 construction will be entirely isolated from the wetted channel by virtue of its position upslope of the OHWM. In this case, the entire existing concrete foundation and abutment wall will be removed and the Bent 2 piling, pile cap, and wingwalls will be constructed. The existing stone wings will be saved insofar as possible, and then reconstructed to help protect the new abutment.

Following substructure construction, the bridge superstructure consisting of precast, prestressed concrete slabs will be constructed over Milton Creek. The bridge rails, asphalt concrete wearing surface and utilities will then be constructed and the bridge will be opened to traffic.

Roadway Upgrades

With the exception of the approaches at both ends of the bridge, no roadway upgrades are proposed. The existing road surface within 30 m of the bridge ends will be removed, and

additional crushed rock base added to reinforce the bridge approaches to maintain a smooth approach to the bridge deck. The existing alignment of Milton Way will not be widened.

Work Area Isolation/Fish Salvage

Before beginning demolition and construction activities within the wetted channel of the creek, proposed work areas will be isolated from streamflow and dewatered. Accomplishing the proposed work in dry conditions will reduce potential impacts to downstream water quality and minimize direct harm to fish. Work area isolation, dewatering, and fish salvage and handling activities will be monitored by trained and experienced biologists. All work area isolation activities including fish salvage, dewatering, pumping and release of discharge water, and reintroduction of flows will be conducted during the in-water work period approved for Milton Creek (July 15-August 31). Fish salvage will follow NOAA Fisheries guidelines.

Stormwater Treatment

Two inlets will be constructed at each end of the new bridge. These inlets will accept runoff from the bridge deck and approaches. The upstream inlet will be a standard ODOT Type G-2 inlet. The second inlet at each end will be a Modified Type G-2 Water Quality Inlet, which will separate much of the oil and debris from the stormwater before it flows into Milton Creek via small outfall pipes at the bridge bents.

This site is constrained by railroad and private properties. There are no open areas for on-site stormwater detention, except within the regulated area. The volume of stormwater expected from the 190 m^2 drainage area is small. Drainage impact to the base and peak flow of Milton Creek is calculated at less than 1 cubic foot per second.

There will be no connection to the municipal sewer system. The proposed water quality treatment system will represent an improvement over existing conditions, as stormwater and pollutants from cars falls directly through the open grate of the existing bridge into Milton Creek. Regular maintenance of the inlets will be required to remove accumulated debris. The water quality inlets are designed to treat approximately two-thirds of the 2-year storm event. The overall surface area of the bridge is very small, therefore, the inlets do not require a large treatment capacity.

Riparian Vegetation

Approximately 15 trees will be removed to the east of the bridge to construct the proposed project. The trees range from 2 to 16 inches in diameter. Due to limited space in the right-of-way, the 15 trees removed will not be replanted on-site. At least 15 large, native, deciduous trees will be planted in bare areas along Milton Creek in McCormick Park, 1000 metersdownstream of the project site. At the project site, shrubs and ground cover will be planted to provide bank stabilization.

1.3 Action Area

The action area is defined by NOAA Fisheries regulations (50 CFR 402) as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” The action area is Milton Creek, including the streambed, streambank, water

column and adjacent riparian zone, 30 meters upstream and 30 meters downstream of the construction area.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

The objective of this biological opinion (Opinion) is to determine whether the proposed action is likely to jeopardize the continued existence of these ESA-listed species for these species. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

2.1.1 Biological Information

According to a recent draft of "Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead," drafted by the West Coast Salmon Biological Review Team (BRT), a number of evolutionarily significant units (ESUs) were concluded by the majority of the BRT "likely to become endangered in the foreseeable future:" including: LCR chinook and LCR steelhead (NMFS 2003). Preliminary conclusions for each listed ESU considered in this Opinion are discussed below.

LCR Chinook
Natural origin fish had parents that spawned in the wild as opposed to hatchery-origin fish whose parents were spawned in a hatchery. The abundance of natural-origin spawners range from completely extirpated for most of the spring-run populations to over 6,500 for the Lewis River bright population. The majority of the fall-run tule populations have a substantial fraction of hatchery-origin spawners in the spawning areas and are hypothesized to be sustained largely by hatchery production. Exceptions are the Coweeman and Sandy River fall-run populations which have few hatchery fish spawning on the natural spawning areas. These populations have recent mean abundance estimates of 348 and 183 spawners, respectively. The majority of the spring-run populations have been extirpated largely as the result of dams blocking access to their high elevation habitat. The two bright chinook populations (*i.e.* Lewis and Sandy) have relatively high abundances, particularly the Lewis.

In many cases, data were not available to distinguish between natural- and hatchery-origin spawners, so only total spawner (or dam count) information is presented. This type of figure can give a sense of the levels of abundance, overall trend, patterns of variability, and the fraction of hatchery-origin spawners. A high fraction of hatchery-origin spawners indicates that the population may potentially be sustained by hatchery production and not the natural environment. It is important to note that estimates of the fraction of hatchery-origin fish are highly uncertain since the hatchery marking rate for LCR fall chinook is generally only a few percent and expansion to population hatchery fraction is based on only a handful of recovered marked fish.

LCR Steelhead
Based on the updated information provided in this report, the information contained in

previous LCR status reviews, and preliminary analyses, the number of historical and currently viable populations have been tentatively identified. This summary indicates some of the uncertainty about this ESU. Like the previous BRT, the current BRT could not conclusively identify a single population that is naturally self-sustaining. Over the period of the available time series, most of the populations are in decline and are at relatively low abundance (no population has recent mean greater than 750 spawners). In addition, many of the populations continue to have a substantial fraction of hatchery origin spawners and may not be naturally self-sustaining.

Columbia River Chum

A majority of the BRT votes for this ESU fell in the "likely to become endangered" category, with a minority falling in the "danger of extinction" category. Most or all of the risk factors identified previously by the BRT remain important concerns. The Technical Recovery Team (TRT) has estimated that close to 90% of the historic populations in the ESU are extinct or nearly so, resulting in loss of much diversity and connectivity between populations. The populations that remain are small, and overall abundance for the ESU is low. This ESU has showed low productivity for many decades, even though the remaining populations are at low abundance and density-dependent compensation might be expected. The BRT was encouraged that unofficial reports for 2002 suggest a large increase in abundance in some (perhaps many) locations. Whether this large increase is due to any recent management actions or simply reflects unusually good conditions in the marine environment is not known at this time, but the result is encouraging, particularly if it were to be sustained for a number of years.

It is likely that chum salmon used Milton Creek historically for rearing and spawning. However, according to the BA, no chum salmon were found in Milton Creek during recent surveys in 1999 and 2000. NOAA Fisheries does not expect chum salmon to be present in the project area during the duration on construction.

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402. NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of: (1) Defining the biological requirements and current status of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' analysis considers the extent to

which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of listed species under the existing environmental baseline.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the listed species, based upon their risk of extinction, has not significantly improved since the species were listed.

2.1.4 Environmental Baseline

The most recent evaluation of the environmental baseline for the Columbia River is part of the NOAA Fisheries' Biological Opinion for the Bonneville Power Administration's Habitat Improvement Program (HIP), issued in August 2003 (NOAA Fisheries No.: 2003/00750). A detailed evaluation of the environmental baseline of the Columbia River basin can be found in the HIP biological opinion (NOAA Fisheries 2003a).

The quality and quantity of fresh water habitat in much of the Columbia River basin have declined dramatically in the last 150 years. Forestry, farming, grazing, road construction, hydropower system development, mining, and development have radically changed the historical habitat conditions of the basin. More than 2,500 streams, river segments, and lakes in the Northwest do not meet Federally-approved, state, and/or Tribal water quality standards and are now listed as water-quality-limited under section 303(d) of the Clean Water Act. Tributary water quality problems contribute to poor water quality when sediment and contaminants from the tributaries settle in mainstem reaches and the estuary. Most of the waterbodies in Oregon on the 303(d) list do not meet water quality standards for temperature. High water temperatures adversely affect salmonid metabolism, growth rate, and disease resistance, as well as the timing of adult migrations, fry emergence, and smoltification. Many factors can cause high stream temperatures, but they are primarily related to land-use practices rather than point-source discharges. Some common actions that cause high stream temperatures are the removal of trees or shrubs that directly shade streams, water withdrawals for irrigation or other purposes, and warm irrigation return flows. Loss of wetlands and increases in groundwater withdrawals

contribute to lower base-stream flows that, in turn, contribute to temperature increases. Activities that create shallower streams also cause temperature increases.

Many waterways in the Columbia River basin fail to meet Clean Water Act (CWA) and Safe Drinking Water Act (SDWA) water quality standards due to the presence of pesticides, heavy metals, dioxins and other pollutants. These pollutants originate from both point (industrial and municipal waste) and nonpoint (agriculture, forestry, urban activities, *etc.*) sources. The types and amounts of compounds found in runoff are often correlated with land use patterns. Fertilizers and pesticides are found frequently in agricultural and urban settings, and nutrients are found in areas with human and animal waste. People contribute to chemical pollution in the basin, but natural and seasonal factors also influence pollution levels in various ways. Nutrient and pesticide concentrations vary considerably from season to season, as well as among regions with different geographic and hydrological conditions. Natural features (such as geology and soils) and land-management practices, such as stormwater drains, tile drainage and irrigation, can influence the movement of chemicals over both land and water. Salmon and steelhead require clean water and gravel for successful spawning, egg incubation, and fry emergence. Fine sediments clog the spaces between gravel and restrict the flow of oxygen-rich water to the incubating eggs. Pollutants, excess nutrients, low levels of dissolved oxygen, heavy metals, and changes in pH also directly affect the water quality for salmon and steelhead.

Water quantity problems are also a significant cause of habitat degradation and reduced fish production. Millions of acres in the Columbia River basin are irrigated. Although some of the water withdrawn from streams eventually returns as agricultural runoff or groundwater recharge, crops consume a large proportion of it. Withdrawals affect seasonal flow patterns by removing water from streams in the summer (mostly May through September) and restoring it to surface streams and groundwater in ways that are difficult to measure. Withdrawing water for irrigation, urban consumption, and other uses increases temperatures, smolt travel time, and sedimentation. Return water from irrigated fields can introduce nutrients and pesticides into streams and rivers. Deficiencies in water quantity have been a problem in the major production subbasins for some ESUs that have seen major agricultural development over the last century. Water withdrawals (primarily for irrigation) have lowered summer flows in nearly every stream in the basin and thereby profoundly decreased the amount and quality of rearing habitat. In fact, in 1993, fish and wildlife agency, Tribal, and conservation group experts estimated that 80% of 153 Oregon tributaries had low-flow problems, two-thirds of which was caused (at least in part) by irrigation withdrawals (OWRD 1993). The Northwest Power Planning Council (NWPPC 1992) found similar problems in many Idaho, Oregon, and Washington tributaries.

Blockages that stop downstream and upstream fish movement exist at many dams and barriers, whether they are for agricultural, hydropower, municipal/industrial, or flood control purposes. Culverts that are not designed for fish passage also block upstream migration. Being diverted into unscreened or inadequately screened water conveyances or turbines sometimes kills migrating fish. While many fish-passage improvements have been made in recent years, manmade structures continue to block migrations or kill fish throughout the basin.

On the landscape scale, human activities have affected the timing and amount of peak water runoff from rain and snowmelt. Forest and range management practices have changed

vegetation types and density that, in turn, affect runoff timing and duration. Many riparian areas, floodplains, and wetlands that once stored water during periods of high runoff have been destroyed by development that paves over or compacts soil, thus increasing runoff and altering natural hydrograph patterns.

Land ownership has also played its part in the region's habitat and land-use changes. Federal lands, which compose 50% of the basin, are generally forested and situated in upstream portions of the watersheds. While there is substantial habitat degradation across all land ownerships, in general, habitat in many headwater stream sections is in better condition than in the largely non-federal lower portions of tributaries (Doppelt *et al.* 1993, Frissell 1993, Henjum *et al.* 1994, Quigley and Arbelbide 1997). In the past, valley bottoms were among the most productive fish habitats in the basin (Stanford and Ward 1992, Spence *et al.* 1996, ISG 1996). Today, agricultural and urban land development and water withdrawals have significantly altered the habitat for fish and wildlife in these valley bottoms. Streams in these areas typically have high water temperatures, sedimentation problems, low flows, simplified stream channels, and reduced riparian vegetation.

At the same time some habitats were being destroyed by water withdrawals in the Columbia basin, water impoundments in other areas dramatically reduced habitat by inundating large amounts of spawning and rearing habitat and reducing migration corridors, for the most part, to a single channel. Floodplains have been reduced in size, off-channel habitat features have been lost or disconnected from the main channel, and the amount of large woody debris (large snags/log structures) in rivers has been reduced. Most of the remaining habitats are affected by flow fluctuations associated with reservoir management.

More than 50% of the original marshes and spruce swamps in the estuary have been converted to industrial, transportation, recreational, agricultural, or urban uses. More than 3,000 acres of intertidal marsh and spruce swamps have been converted by human use since 1948 (LCREP 1999). Many wetlands along the shore in the upper reaches of the estuary have been converted to industrial and agricultural lands after levees and dikes were constructed. Furthermore, water storage and release patterns from reservoirs upstream of the estuary have changed the seasonal pattern and volume of discharge. The peaks of spring/summer floods have been reduced and the amount of water discharged during winter has increased.

The following is a description of the project area, as stated in the BA:

The project site is within the Milton Creek watershed, approximately 3.1 km upstream of the lower end of Scappoose Bay. Scappoose Bay is hydrologically connected to the Multnomah Channel of the Willamette River, approximately 2.6 km upstream of the Columbia River. The Milton Creek watershed encompasses approximately 8,725 hectares (ha) and comprises approximately 25% of the 34,432 ha Scappoose Bay watershed (DEA 2000). Milton Creek and associated tributaries spring from the north and west slopes of the eastern foothills of the Coastal Mountain Range, including Serafin Point and Bunker Hill. A number of smaller tributaries including Smith, Salmon, Cox, Dart, and Perry Creeks, discharge into Milton Creek before it flows through the project action area.

Milton Creek has an approximate 2% gradient within the lower reaches, including the project area (DEA 2000). A bedrock cascade under the Highway 30 bridge approximately 30 m (98 ft) upstream of the project area has formed a straight scour pool that extends underneath the railroad bridge to the downstream edge of the Milton Way Bridge. Below the bridge, the pool tails out into a long riffle. Some of the flow splits around a small island and cuts north into an overflow channel across a long bar created by the railroad bridge pier that sits in the middle of the channel. Substrate within the action area is mostly cobble (approximately 60%), followed by silt and gravel (approximately 18 and 15%). The remaining 7% is a mix of bedrock, boulders, and sand.

The streambanks of Milton Creek within the action area have been heavily disturbed. The creek has been straightened and it has incised, leaving steep, narrow banks. The Milton Way Bridge piers sit within the channel and contribute to bank hardening. Upstream and downstream of the action area, some areas of the streambanks have been hardened by concrete retaining walls and bridge piers. Riparian vegetation is present on the steep banks between the bridge piers and hardened streambank areas, however, it is limited to a narrow strip on either side of the creek. Residences downstream of the action area have manicured lawns that abut the creek in many locations, precluding riparian vegetation growth.

2.1.5 Analysis of Effects

Turbidity from Construction

The effects of suspended sediment and turbidity on fish, as reported in the literature, range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd, 1987).

Turbidity caused by this project is expected to be minor, local, and short-term because the work area will be isolated from the creek in the work area.

Fish Salvage

The most lethal biological effects of the proposed action on individual listed salmon will likely be caused by the isolation of in-water areas. Although work area isolation is itself a conservation measure intended to reduce the adverse effects of erosion and runoff on the population, any individual fish present in the work isolation area will be captured and released. Capturing and handling fish causes them stress, though they typically recover fairly rapidly from the process and therefore the overall effects of the procedure are generally short-lived (NMFS

2002). The primary contributing factors to stress and death from handling are differences in water temperatures (between the river and wherever the fish are held), dissolved oxygen concentrations, the amount of time that fish are held out of the water, and physical trauma. Stress on salmonids increases rapidly from handling if the water temperature exceeds 18°C or dissolved oxygen is below saturation. These biological effects will be minimized or avoided by the following conservation measure:

> Any listed fish that may be trapped within the isolated work area will be captured and released using methods approved by NOAA Fisheries, including supervision by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.

Based on past data, several species are likely to be present in the project area. The applicant anticipates that 10 steelhead and 2 chinook salmon may be captured and handled during salvage operations, which may prove fatal to some animals.

Riparian Vegetation

To the extent that vegetation is providing habitat function, such as delivery of large wood, particulate organic matter, or shade to a riparian area and stream, root strength for slope and bank stability, and/or sediment filtering and nutrient absorption from runoff, removal of that vegetation for construction will reduce or eliminate those habitat values (Darnell 1976, Spence *et al.* 1996). Denuded areas lose organic matter and dissolved minerals such as nitrates and phosphates. Microclimate can become drier and warmer with corresponding increases in wind speed, and soil and water temperature. Water tables and spring flow can be reduced. Loose soil can temporarily accumulate in the construction area. In dry weather, this soil can be dispersed as dust. In wet weather, loose soil is transported to streams by erosion and runoff, particularly in steep areas. Erosion and runoff increase the supply of soil to lowland drainage areas and eventually to aquatic habitats where they increase water turbidity and sedimentation. This combination of erosion and mineral loss can reduce soil quality and site fertility in upland and riparian areas.

To compensate for the loss of the trees removed, replacement trees will be planted in bare areas 0.6 miles downstream of the project to provide shade and leaf litter. Shrubs and ground cover will be planted near the new bridge to provide bank stabilization.

Pile Driving

Piles may need to be driven for the replacement bridge. Bents will be constructed above OHW near the vicinity of the dewatered area. Listed salmonids should not be effected by pile driving since the piles will be driven "in the dry."

2.1.6 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being

(or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater effects to listed species than presently occurs. Between 1990 and 2000, the population of Columbia County increased by 16.0%.[1] Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, increasing as population density rises. As the human population in the state continues to grow, demand for actions similar to the subject project likely will continue to increase as well. Each subsequent action may have only a small incremental effect, but taken together they may have a significant effect that would further degrade the watershed's environmental baseline and undermine the improvements in habitat conditions necessary for listed species to survive and recover.

2.1.7 Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of listed species. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects.

These conclusions are based on the following considerations: (1) The work will be completed during the recommended in-water work window of July 15-August 31, when the fewest numbers of listed species are likely to be present; (2) any increases in sedimentation and turbidity in the project area will be minor, local, and short-term; (3) best management practices will be followed for all construction activities; (4) pile driving and bent construction will occur in the dewatered area and above OHWM; and (5) with minimization measures incorporated into the project design, the proposed action is not likely to impair properly functioning habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.7 Reinitiation of Consultation

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

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[1] U.S. Census Bureau, State and County Quickfacts, Columbia County, Oregon. Available at http://quickfacts.census.gov/qfd/states/41/41009.html

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of listed species. It also provides reasonable and prudent measures that are necessary to minimize the effects of take and sets forth non-discretionary terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of listed species because of potential adverse effects from turbidity due to construction and salvage and handling of individuals. NOAA Fisheries anticipates, as stated in the BA, that up to 2 individual LCR chinook salmon and 10 LCR steelhead may be injured or killed by this salvage and handling process. Even though NOAA Fisheries expects some low level of incidental take to occur due to harassment and harm (habitat alteration) caused by the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take to the species itself. In instances such as these, NOAA Fisheries designates the expected amount of take as "unquantifiable." Based on the information provided by the COE and other available information, NOAA Fisheries anticipates that an unquantifiable amount of incidental take could occur as a result of the action covered by this Opinion.

The extent of the take is limited to disturbance resulting from construction activities within the action area. The action area is Milton Creek including the streambed, streambank, water column, and adjacent riparian zone, and 100 feet upstream and 100 feet downstream of the construction area.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The COE has the continuing duty to regulate the activities covered in this incidental take statement. If the COE fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion.

The COE shall include measures that will:

1. Ensure completion of a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from permitted activities.

2. Avoid or minimize incidental take from construction-related activities by applying permit conditions that require completion of construction, operation and maintenance actions with minimum harm to aquatic and riparian systems.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the COE must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To implement reasonable and prudent measure #1 (monitoring), the COE shall ensure that:

    a. Salvage notice. The following notice is included as a permit condition:

> NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at 360.418.4246. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

b. Written planning requirements. Before beginning any work below bankfull elevation,[2] the permittee will provide a copy of the written plans for site restoration and pollution and erosion control to the Oregon State Habitat Office of NOAA Fisheries at the following address. Plan requirements are described below.

Director, Oregon State Habitat Office
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2003/01257
525 NE Oregon Street
Portland, OR 97232

c. Implementation monitoring report required. The permittee submits an implementation monitoring report to the COE and to NOAA Fisheries, at the address below, within 120 days of completing all in-water work. The monitoring report will describe the permittee's success meeting his or her permit conditions.
   i. If the in-water work will not be completed by January 31 following the year during which consultation was completed, the permittee shall submit a report to the COE and to NOAA Fisheries by January 31 saying why the in-water work was not complete.
   ii. If the monitoring report or explanation of why work was not completed is not received by the COE and NOAA Fisheries by January 31, NOAA Fisheries may consider that a modification of the action that causes an effect on listed species not previously considered and causes the incidental take statement of the Opinion to expire.
   iii. Submit a copy of the monitoring report or explanation of why work was not completed to the Oregon State Habitat Office of NOAA Fisheries, at the address above.

d. Implementation monitoring report contents. Each monitoring report will include the following information.
   i. Project identification
      (1) Permittee name, permit number, and project name.
      (2) Project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.
      (3) COE contact person.
      (4) Starting and ending dates for work completed.

[2] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

ii. Habitat conditions. Photos of habitat conditions at the project and any compensation site or sites, before, during, and after project completion.[3]
   (1) Include general views and close-ups showing details of the project and project area, including pre and post construction.
   (2) Label each photo with date, time, project name, photographer's name, and a comment about the subject.

iii. Project data.
   (1) Work cessation. Dates work ceased due to high flows, if any.
   (2) Fish screen. Evidence of compliance with NOAA Fisheries' fish screen criteria.
   (3) Pollution control. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.
   (4) Pilings.
      (a) Number and type of pilings removed, including the number of pilings (if any) that broke during removal.
      (b) Number, type, and diameter of any pilings installed (*e.g.*, untreated wood, treated wood, hollow steel).
      (c) Description of how pilings were installed and any sound attenuation measures used..
   (5) Site preparation.
      (a) Total cleared area – riparian and upland.
      (b) Total new impervious area.
   (6) Isolation of in-water work area, capture and release.
      (a) Supervisory fish biologist – name and address.
      (b) Methods of work area isolation and take minimization.
      (c) Stream conditions before, during and within one week after completion of work area isolation.
      (d) Means of fish capture.
      (e) Number of fish captured by species.
      (f) Release site and condition of all fish released.
      (g) Any incidence of observed injury or mortality of listed species.
   (7) Road construction, repairs and improvements. The justification for any new permanent road crossing design (*i.e.*, road realignment, full span bridge, streambed simulation, or no-slope design culvert).
   (8) Site restoration. Photo or other documentation that site restoration performance standards were met.

e. Annual report on site restoration and compensatory mitigation monitoring. In addition to the 120-day implementation report, the permittee will submit an annual report to the COE and NOAA Fisheries by December 31 that includes the date of each visit to a restoration site, site conditions on that date, and any

[3] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

corrective action taken as a result of that visit. Reporting will continue from year to year until the COE certifies that site restoration or compensatory mitigation performance standards have been met.

f. Reinitiation contact. To reinitiate consultation, contact the Oregon State Habitat Office of NOAA Fisheries, at the address above.

2. To implement reasonable and prudent measure #2 (construction-related activities), the COE shall:

a. Site restoration and compensatory mitigation. Ensure that the permittee successfully completes site restoration.

b. Site restoration. Prepare and carry out a written site restoration plan as necessary to ensure that all streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows. Submit a copy of the written site restoration plan to the COE and to the Oregon State Habitat Office of NOAA Fisheries, at the address above, before beginning work below bankfull elevation.

i. General considerations.

(1) Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (*e.g.*, large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

(2) Streambank shaping. Restore damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (*e.g.*, a natural rock wall).

(3) Revegetation. Replant each area requiring revegetation before the first April 15 following construction. Use a diverse assemblage of species native to the project area or region, including grasses, forbs, shrubs and trees. Noxious or invasive species may not be used.

(4) Pesticides. Take of ESA-listed species caused by any aspect of pesticide use is not included in the exemption to the ESA take prohibitions provided by this incidental take statement. Pesticide use must be evaluated in an individual consultation, although mechanical or other methods may be used to control weeds and unwanted vegetation.

(5) Fertilizer. Do not apply surface fertilizer within 50 feet of any stream channel.

(6) Fencing. Install fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

ii. Plan contents. Include each of the following elements.

(1) Responsible party. The name and address of the party(s) responsible for meeting each component of the site restoration requirements, including providing and managing any financial assurances and monitoring necessary to ensure restoration success.

(2) Baseline information. This information may be obtained from existing sources (*e.g.*, land use plans, watershed analyses, subbasin plans), where available.
   (a) A functional assessment of adverse effects, *i.e.*, the location, extent and function of the riparian and aquatic resources that will be adversely affected by construction and operation of the project.
   (b) The location and extent of resources surrounding the restoration site, including historic and existing conditions.

(3) Goals and objectives. Restoration goals and objectives that describe the extent of site restoration necessary to offset adverse effects of the project, by aquatic resource type.

(4) Performance standards. Use these standards to help design the site restoration plan and to assess whether the restoration goal is met. While no single criterion is sufficient to measure success, the intent is that these features should be present within reasonable limits of natural and management variation.
   (a) Bare soil spaces are small and well dispersed.
   (b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local.
   (c) If areas with past erosion are present, they are completely stabilized and healed.
   (d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.
   (e) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.
   (f) Vegetation structure is resulting in rooting throughout the available soil profile.
   (g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.
   (h) High impact conditions confined to small areas necessary access or other special management situations.
   (i) Streambanks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris.
   (j) Few upland plants are in valley bottom locations, and a continuous corridor of shrubs and trees provide shade for the entire streambank.

(5) Work plan. Include a written work plan as part of the site restoration plan with sufficient detail to include a description of the following elements, as applicable.
   (a) Boundaries for the restoration area.
   (b) Restoration methods, timing, and sequence.
   (c) Water supply source, if necessary.

(d) Woody native vegetation appropriate to the restoration site.[4] This must be a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees. This may include allowances for natural regeneration from an existing seed bank or planting.

(e) A plan to control exotic invasive vegetation.

(f) Elevation(s) and slope(s) of the restoration area to ensure they conform with required elevation and hydrologic requirements of target plant species.

(g) Geomorphology and habitat features of stream or other open water.

(h) Site management and maintenance requirements.

(6) Five-year monitoring and maintenance plan.

(a) A written schedule to visit the restoration site annually for five years or longer as necessary to confirm that the performance standards are achieved. Despite the initial five-year planning period, site visits and monitoring will continue from year-to-year until the COE certifies that site restoration performance standards have been met.

(b) During each visit, inspect for and correct any factors that may prevent attainment of performance standards (*e.g.*, low plant survival, invasive species, wildlife damage, drought).

(c) Keep a written record to document the date of each visit, site conditions and any corrective actions taken.

c. Minimum area. Confine construction impacts to the minimum area necessary to complete the project.

d. Timing of in-water work. Complete all work below the bankfull elevation between July 15-August 31, unless otherwise approved in writing by NOAA Fisheries.

e. Cessation of work. Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

f. Fish screens. Install, operate and maintain a fish screen according to NOAA Fisheries' fish screen criteria[5] on each water intake used for project construction, including pumps used to isolate an in-water work area. Screens for water diversions or intakes that will be used for irrigation, municipal or industrial purposes, or any use besides project construction are not authorized.

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[4] Use references sites to select vegetation for the mitigation site whenever feasible. Historic reconstruction, vegetation models, or other ecologically-based methods may also be used as appropriate.

[5] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

g. Fish passage. Provide passage for any adult or juvenile salmonid species present in the project area during construction, unless otherwise approved in writing by NOAA Fisheries, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.

h. Pollution and Erosion Control Plan. Prepare and carry out a written pollution and erosion control plan to prevent pollution caused by surveying or construction operations. Submit a copy of the written plan to the COE and to the Oregon State Habitat Office of NOAA Fisheries, at the address above, before beginning work below bankfull elevation.

i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

(1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.

(2) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.

(3) Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.

(4) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

(5) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

(6) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[6]

(1) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

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[6] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

(2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

i. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows:

i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals, and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed 1 inch.

iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the two-year floodplain.

iv. Drilling discharge. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated to prevent drilling fluids or other wastes from entering the stream.

(1) All drilling fluids and waste will be completely recovered then recycled or disposed to prevent entry into flowing water.

(2) Drilling fluids will be recycled using a tank instead of drill recovery/recycling pits, whenever feasible.

(3) When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (*e.g.*, by pumping) to reduce turbidity when the sleeve is removed.

j. Preconstruction activity. Complete the following actions before significant[7] alteration of the project area.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[8]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

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[7] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

[8] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

k. Temporary access roads and drilling pads. All temporary access roads and drilling pads will be constructed as follows:

i. Existing ways. Use existing roadways, travel paths, and drilling pads whenever possible, unless construction of a new way or drilling pad would result in less habitat take. When feasible, eliminate the need for an access road by walking a tracked drill or spider hoe to a survey site, or lower drilling equipment to a survey site using a crane.

ii. Steep slopes. Temporary roads or drilling pads built mid-slope or on slopes steeper than 30% are not authorized.

iii. Minimizing soil disturbance and compaction. Minimize soil disturbance and compaction whenever a new temporary road or drill pad is necessary within 150 feet[9] of a stream, water body or wetland by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NOAA Fisheries.

iv. Obliteration. When the project is complete, obliterate all temporary access roads that will not be in footprint of a new bridge or other permanent structure, stabilize the soil, and revegetate the site. Abandon and restore temporary roads in wet or flooded areas by the end of the in-water work period.

l. Heavy Equipment. Restrict use of heavy equipment as follows:

i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).

ii. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows:

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, water body or wetland, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within 150 feet of any stream, water body or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by COE or NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below

[9] Distances from a stream or water body are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. 'Channel migration zone' means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years (e.g., alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams).

bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.

(5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

m. Site preparation. Conserve native materials for site restoration.

i. If possible, leave native materials where they are found.

ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.

iii. Stockpile any large wood,[10] native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

n. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, or if the work area is 300 feet upstream of spawning habitats, completely isolate the work area from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials, unless otherwise approved in writing by NOAA Fisheries.

o. Capture and release. Before and intermittently during pumping to isolate an in-water work area, attempt to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

i. The entire capture and release operation must be conducted or supervised by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.

ii. Do not use electrofishing if water temperatures exceed 18°C.

iii. If electrofishing equipment is used to capture fish, comply with NOAA Fisheries' electrofishing guidelines.[11]

iv. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

v. Transport fish in aerated buckets or tanks.

vi. Release fish into a safe release site as quickly as possible, and as near as possible to capture sites.

vii. Do not transfer ESA-listed fish to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

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[10] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

[11] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

viii. Obtain all other Federal, state, and local permits necessary to conduct the capture and release activity.

ix. Allow NOAA Fisheries or its designated representative to accompany the capture team during the capture and release activity, and to inspect the team's capture and release records and facilities.

p. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.

i. Drilling and sampling. If drilling, boring or jacking is used, the following conditions apply.

(1) Isolate drilling operations in wetted stream channels using a steel pile, sleeve or other appropriate isolation method to prevent drilling fluids from contacting water.

(2) If it is necessary to drill through a bridge deck, use containment measures to prevent drilling debris from entering the channel.

ii. Site stabilization. Stabilize all disturbed areas, including obliteration of temporary roads, following any break in work unless construction will resume within four days.

iii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the project outside the riparian area.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (§305(b)(4)(A)).

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10), and "adverse effect" means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of EFH

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for Federally-managed fisheries within the waters of Washington, Oregon, and California. Designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border (PFMC 1999).

Detailed descriptions and identifications of EFH are contained in the fishery management plans for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Pacific salmon (PFMC 1999). Casillas *et al.* (1998) provides additional detail on the groundfish EFH habitat complexes. Assessment of the potential adverse effects to these species' EFH from the proposed action is based, in part, on these descriptions and on information provided by the COE.

3.3 Proposed Actions

The proposed action and action area are detailed above in sections 1.2 and 1.3 of this Opinion. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5 of this document, the proposed action will result in short-term adverse effects to a variety of habitat parameters. NOAA Fisheries believes that the proposed action will cause a minor, short-term degradation of anadromous salmonid habitat due to increases in turbidity and sound effects from pile driving. Minimization measures will be incorporated into the construction methods to reduce adverse impacts to EFH.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action will adversely affect the EFH for chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions which may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the COE it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. However, the terms and conditions outlined in section 2.2.3 are generally applicable to designated EFH for the species designated in section 3.3, and address these adverse effects. Consequently, NOAA Fisheries incorporates them here as EFH conservation recommendations.

3.7 Statutory Response Requirement

Pursuant to the MSA (§305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The COE must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes

available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(k)).

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